

Circular CONVECTION HEATERS



CATALOG No. 8
APRIL 1928

CIRCULAIR HEAT, INC.

INCORPORATED

215 Central Avenue

LOUISVILLE, KENTUCKY

NEW YORK, 50 Church St. • 1916 Builders Bldg., CHICAGO

Circulair Heat ~ In Wall or Cabinet

Circulair is an improved type of heating unit for use with hot water, steam, vacuum or vapor systems in place of cast iron radiation. By scientifically utilizing the principles of convection and circulation, **Circulair** Heat Units secure a more thorough and uniform distribution of heat thruout the zone of occupancy with a temperature difference of only 5° or less between floor and ceiling. In addition to maintaining a uniform comfortable temperature, **Circulair** by constantly and thoroughly circulating all the air in the room, eliminates the unpleasant sensation caused by improper air movement common to other systems.

Concealed in Wall or Cabinet

Due to its high efficiency and compact design, a **Circulair** Unit is only a fraction the size of its equivalent in cast iron radiation and requires so little space that it may be installed in an ordinary wall where it is entirely out of the way, or concealed in an attractive cabinet.

The **Circulair** Heat Unit consists of a carefully designed all-copper heating element mounted in a sturdy metal casing including as

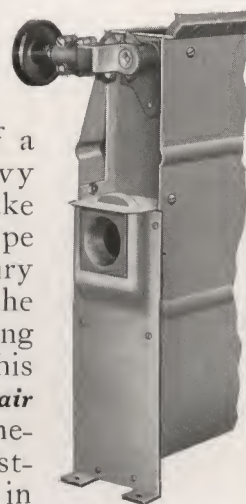


Concealed in wall but not walled in.



Circulair Heat Cabinets are neat and attractive and take up very little room.

integral parts; a bottom or intake deflector; an air-tight damper; and modulating damper control. This self-contained unit construction simplifies the installation of the heater; the heavy casing protects the heating element against damage in shipping and handling, and makes it practical to use **Circulair** for temporary heat when necessary during the erection of a building. The extra heavy pressed steel end plates take all the strains of making pipe connections, preventing injury during installation and from the weight or expansion of the piping in service. Yet, in spite of this rigid construction, the **Circulair** Unit weighs less than one-twelfth its equivalent in cast-iron radiation. This saving in weight not only reduces floor load, but makes **Circulair** much easier to handle and install.



The damper and damper control are integral parts of the Circulair Unit. Note the sturdy construction.

*An improved method of heating which economically achieves uniform, comfortable warmth by means of induced circulation of air—**Circulair***



Out of the way—yet readily accessible.

The heating element is a straight seamless oval copper tube on which are pressed die-stamped copper plates or fins, evenly spaced along its entire length. After being completely assembled it is dipped in a bath of molten metal to secure a perfect metallic union and insure an uninterrupted flow of heat between the tube and the plates.



Cross section of heating element showing how prime heating surface is practically equal distance from edges of the plates, resulting in even heat distribution.

The oval shape of the tube in the **Circulair** Heating element by approximating the rectangular form of the plates gives more even distribution of heat over the entire plate area and makes every square inch of extended surface fully effective. It also offers less restriction to the flow of air thru the heater when installed in an ordinary wall or partition. Another advantage of the oval tube is

that under excessive pressure it can expand and a **Circulair** Heater filled with water may be frozen solid without injuring the element. The exact shape of this tube has been developed by careful experiment and to it is due in a large measure the high efficiency and satisfactory performance of **Circulair** Heat.

The curved intake deflector beneath the heating element has a much greater effect on efficiency than the deflector at the outlet grille. Tests show that this intake deflector by smoothing out and accelerating the flow of air into the heater produces an actual increase of 7% in over-all efficiency. This increased efficiency is reflected in fuel economy and means a saving for every minute the heating system is in service.

Positive Heat Control

Control of **Circulair** Heat is accomplished by means of a damper or valve or both. The damper is provided as an integral part of the **Circulair** Unit; located immediately above the heating element. This location of the damper is an important feature as it was found that when placed at the outlet grille



The tall shallow cabinet saves floor space and discharges the heat above the breathing line.

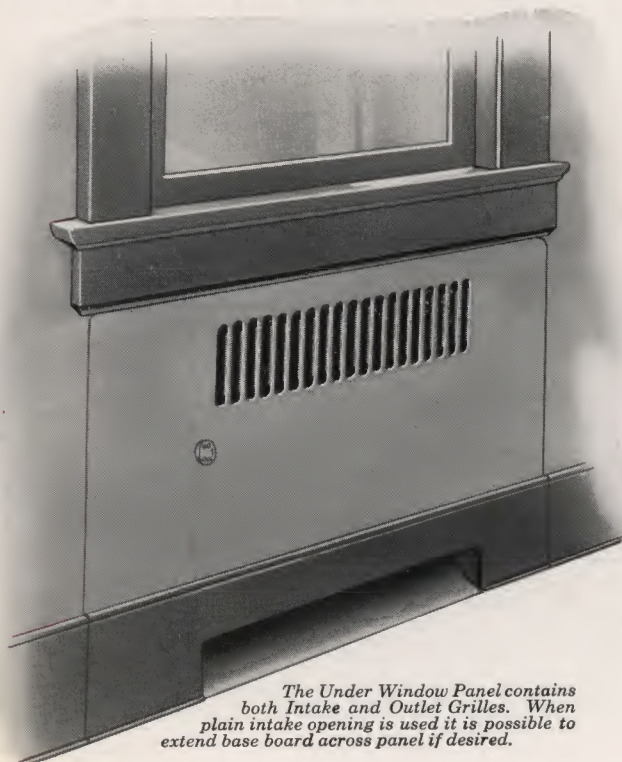
there is considerable heat loss with the damper closed due to convection currents within the stack and conduction thru the walls. In **Circulair** this loss has been reduced to a minimum by having the damper a part of the heating unit.

The damper is operated thru a positive bevel gear control by means of a convenient knob. Any degree of heat is secured by adjusting the position of the damper which regulates the volume of heated air discharged by the **Circulair**. When the damper is closed the heat is entirely shut off but the element remains hot and maximum heating effect is instantly available by merely opening the damper.

Removable Wall Panel

With the Concealed type **Circulair** a removal wall panel is provided to allow ready access to the heating unit, valves and piping. Another advantage of the wall panel is that in case of unforeseen delay the heater can be installed after the wall is plastered. If desired, however, the panel may be eliminated and the unit plastered in the wall.

For concealed installations under windows one piece wall panels containing both intake and outlet grilles are provided. These Under Window Panels are made in two styles—with standard intake grille or with plain intake opening as shown below—and four over-all



The Under Window Panel contains both Intake and Outlet Grilles. When plain intake opening is used it is possible to extend base board across panel if desired.

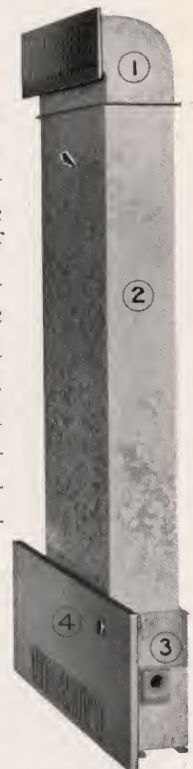


Circulair may be plastered in wall without removable panel if desired.

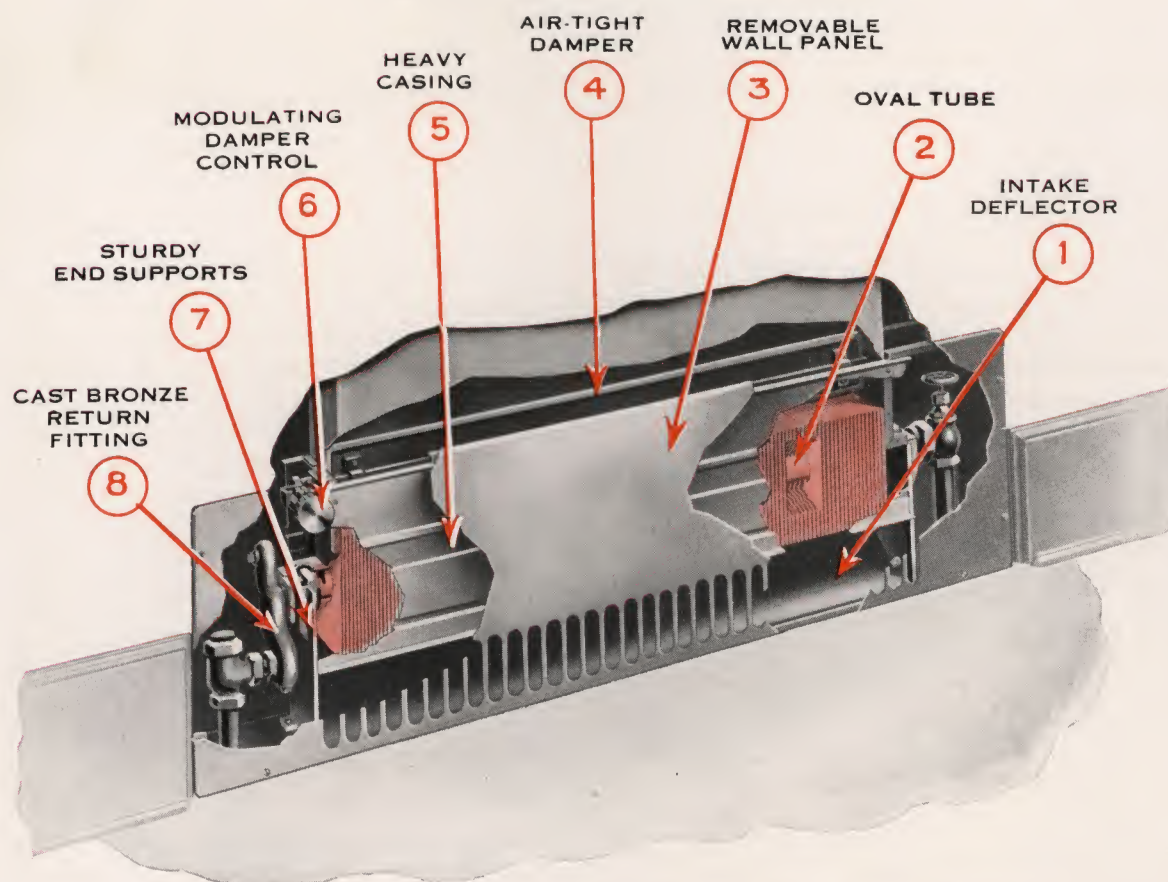
heights of 20, 22, 24 and 26 inches to conform to standard heights of sills.

Circulair was designed and perfected by Willis H. Carrier, probably the Country's foremost authority on heat transfer, and his associate engineers of long experience in the Heating and Ventilating field. The many exclusive features—eight of which are shown on the next page—will give some idea of the thought and painstaking research based on a real knowledge of the requirements, which entered into the development of **Circulair**. It represents the most advanced practice in modern scientific heating, combining economy and efficiency with architectural advantages.

Circulair may be used wherever a cast iron radiator is applicable and with any type of heating system—one or two pipe steam, hot water, vacuum or vapor. It is furnished in a wide range of sizes to meet every requirement and operates with equal efficiency whether installed in a cabinet or concealed within the wall.



(1) Outlet Grille and Boot. (2) Stack. (3) Heater Unit. (4) Removable Wall Panel. This is the complete equipment for a concealed Circulair installation.



Phantom view of concealed heater showing 8 distinct Circulair advantages

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| <p>[1] Intake Deflector increases over-all efficiency seven per cent.</p> <p>[2] Oval Copper Tube—insures even distribution of heat over entire plate areas and offers minimum restriction to circulation of air thru heater.</p> <p>[3] Removable Wall Panel permits immediate access to heater and piping.</p> | <p>[4] Air-Tight Damper on heater itself prevents leakage and cuts off heat entirely when closed. Any degree of heat is instantly available by a simple adjustment of this damper.</p> <p>[5] Self-Contained Unit (consisting of heater, deflector and damper), mounted in heavy casing, prevents damage in handling and simplifies installation.</p> | <p>[6] Modulating Damper Control—positive heat control insuring comfort at all times.</p> <p>[7] Sturdy End Supports—carry weight of piping and prevent strain on heater unit.</p> <p>[8] Cast Bronze Return Fitting—provides cooling leg for trap jobs; and permits use of Siphon Air Valve.</p> |
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How Circularair Operates

The oval copper tube in the **Circularair** Unit is heated by the steam or hot water passing thru it, and due to the high conductivity of copper (8 times that of cast iron) this heat is rapidly transferred to the copper plates or fins. Less than three minutes is required for the **Circularair** Heating Element to reach operating temperature as compared with half an hour or longer for a cast iron radiator.

With the oval prime heating surface which conforms to the rectangular shape of the extended surfaces, the heat distribution is practically uniform over the entire plate area, thus insuring maximum heating efficiency.

The air between the plates being quickly heated, rises and cold air from the floor comes in to take its place, thus producing a continuous flow of heat. The heated air rising from the **Circularair** Heater passes up thru a sheet metal duct or "stack" to the outlet grille. The natural draft of the stack accelerates the flow of heated air and a curved deflector back of the outlet grille projects it far out into the room, into the zone of occupancy where it is most effective. This method of positive circulation achieves uniform, comfortable warmth with a temperature difference of only 5° (five

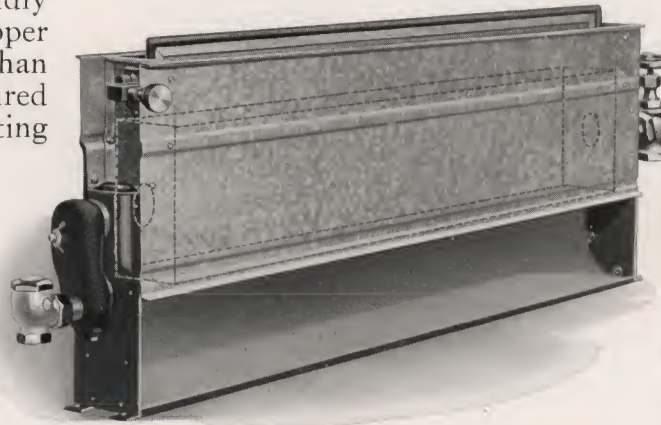
degrees) between floor and ceiling, while with cast iron radiation this difference is often as much as 15° (fifteen degrees) or more.

Positive heat control is secured by means of a modulating damper easily regulated by a convenient knob. This damper is edged with felt which makes it air-tight and prevents any heat from escaping when the damper is closed. A valve is usually provided at the heater or in the riser to shut off the heater entirely should it become desirable to do so, but it is seldom used as a regulator since the

damper is more positive and convenient. Any degree of heat from none at all to full capacity is instantly available by merely adjusting the position of the damper.

There is no waiting for **Circularair** to cool off or heat up as with cast iron radiation. This feature is particularly desirable in bedrooms where the heat is shut off at night but needed immediately upon arising, and in localities where rapid temperature changes are not uncommon during the winter months.

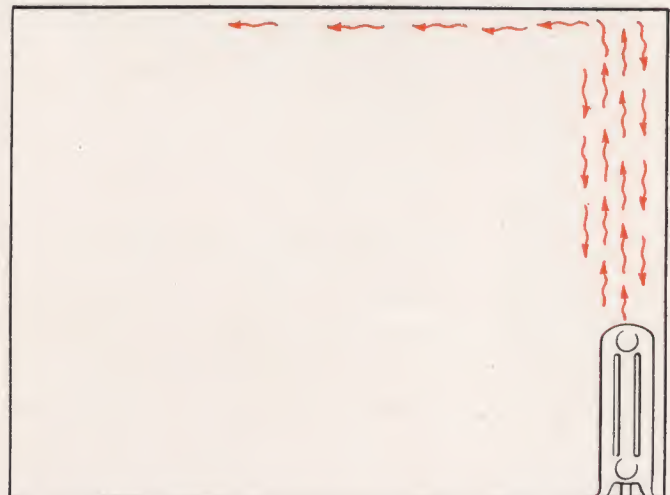
The removable wall panel overcomes the objection to plastering a concealed heater in the wall. It gives ready access to heating unit, valves, traps and piping without marring the wall or having to remove the base board.



Circularair Heat Unit. Dotted line shows location of heating element. Valve and Trap are not furnished.



Circularair Heat is distributed evenly thruout zone of occupancy with a temperature difference of only 5° between floor and ceiling.

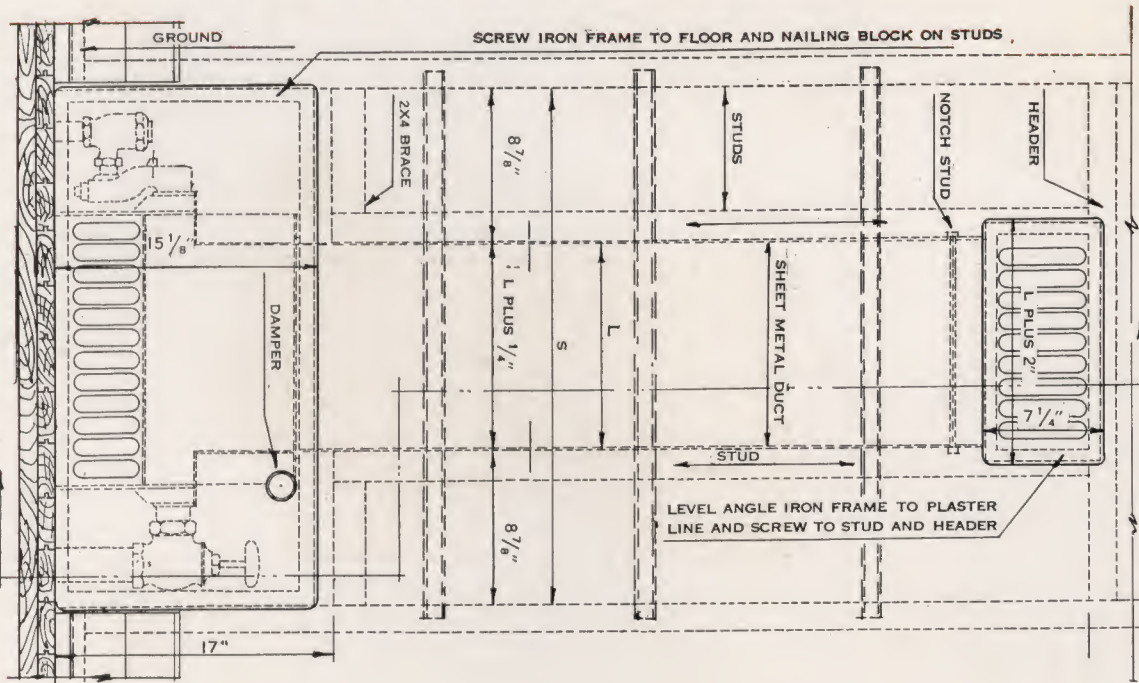


Convection currents from cast iron radiator carry heat directly to ceiling, resulting often in a difference of 15° between floor and ceiling.

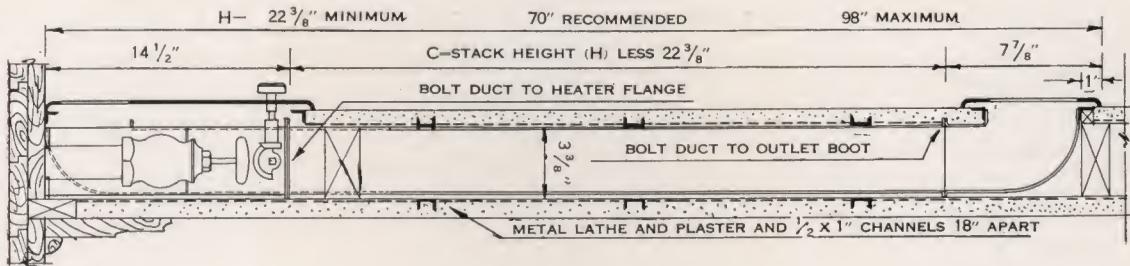
Installation Details

Circular Heaters are made in four types: No. 4 for installation in walls between 4" studs, No. 6 for 6" studs, No. 8 for 8" studs, and No. 16 for window seats, under floors, and in walls permitting a 16" recess. The No. 8 Heater is used in the Standard Cabinet, the No. 16 Heater in the Double Capacity Cabinet, and the No. 4 Heater in the Tall Shallow Cabinet.

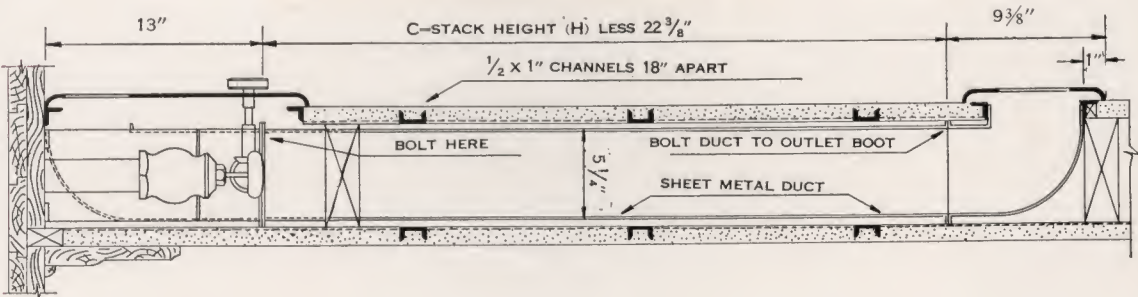
FRONT ELEVATION ALL HEATERS



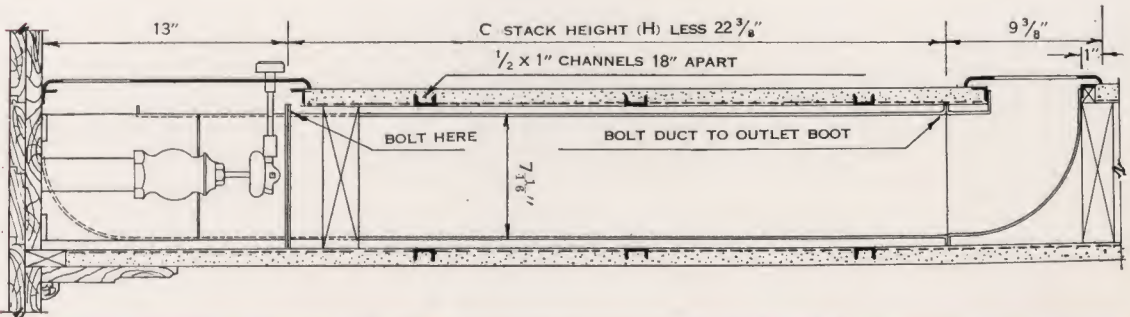
SECTION NO. 4 HEATER

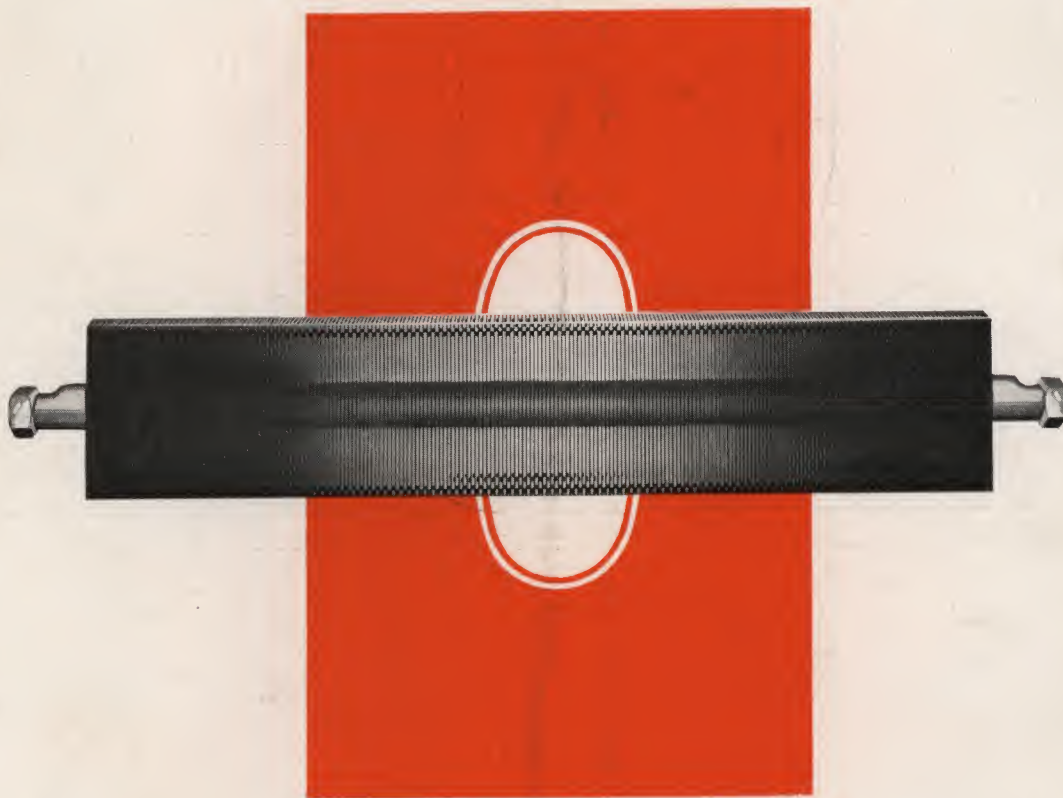


SECTION NO. 6 HEATER



SECTION NO. 8 HEATER





Circulair Heat

*The Heating Element
with the Oval Tube*

CIRCULAIR HEAT, INC.
215 Central Ave. LOUISVILLE, KY.

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